

S/138/60/000/008/003/015
A051/A029

The Effect of Various Types of Stabilizers on the Change in Nairite Properties During Aging

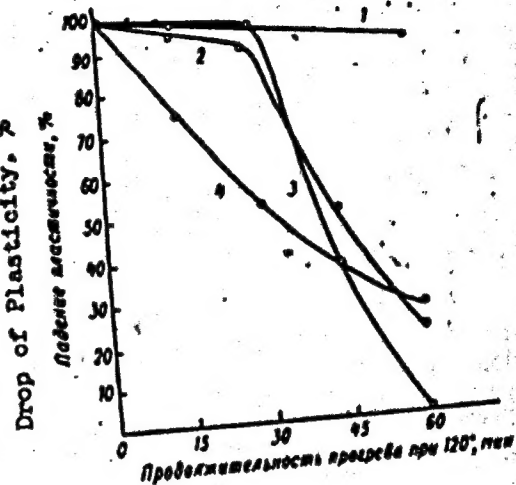
2 Soviet, 1 English.

ASSOCIATION: Vsesoyuznyy Nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S.V. Lebedeva (Scientific Research Institute of Synthetic Rubber imeni S.V. Lebedev)

Figure 3:

The Effect of Polyphenols on the Stability of Nairite:

1 - Control; 2 - 2% dimethyl-phenyl-n-cresol; 3 - 2% para-ditertiarybutyldioxyphenylene-sulfide; 4 - 2% lignin.



Duration of Heating at 120°C, min

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5.3831

77350
SOV/79-30-1-11/78

AUTHORS: Klebanokiy, A. L., Timofeyev, O. A.
TITLE: Copolymerization of Hexafluorobutadiene With Dienes
in Solution
PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1,
pp 60-67 (USSR)
ABSTRACT: Copolymerization of hexafluorobutadiene with chloroprene,
fluoroprene, and isoprene was studied. Copolymerization
of hexafluorobutadiene with chloroprene proceeds faster
in polar solvents (chloroform, chlorobenzene) because
they facilitate the orientation of molecules, and
this, probably, increases the rate of polymerization.
Benzoyl peroxide and the dinitrile of azoisobutyric
acid are the most effective initiators for this
type of copolymerization. The effect of the ratio of
monomers in the starting mixture on the rate of
polymerization is shown in Fig. 5.

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Copolymerization of Hexafluorobutadiene
With Dienes in Solution

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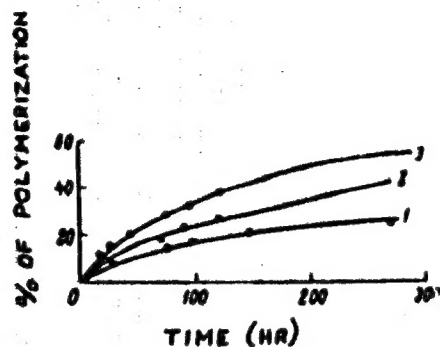


Fig. 5. Dependence of rate of polymerization on initial ratio of monomers. Ratio of monomer:benzene = 1:1; temperature 50° ; initiator, hydrogen peroxide of isopropylbenzene (0.6 molar %). Ratio of chloroprene:hexafluorobutadiene (1) 2.5:7.5; (2) 5.0:5.0; (3) 7.5:2.5.

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Copolymerization of Hexafluorobutadiene
With Dienes in Solution

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The more hexafluorobutadiene in the starting mixture, the more of it is found in the copolymer. Copolymerization of hexafluorobutadiene with chloroprene carried out at 40, 50, and 60° indicates that rising temperature (60°) increases the rate of copolymerization. But temperature has only a slight effect on the composition of copolymer. The rate of copolymerization of fluoroprene-hexafluorobutadiene and isoprene-hexafluorobutadiene, taken in ratios 7.5:2.5, 5.0:5.0, and 2.5:7.5, decreases with the increase of hexafluorobutadiene in the starting mixture. The constants of the copolymerization of the monomers studied are: chloroprene-hexafluorobutadiene, $r_1 = 5.47$, $r_2 = 0.10$; fluoroprene-hexafluorobutadiene, $r_1 = 2.93$, $r_2 = 0.24$; isoprene-hexafluorobutadiene, $r_1 = 1.19$, $r_2 = 0.78$. The comparative activities of monomers and radicals are shown in Table A.

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Copolymerization of Hexafluorobutadiene
With Dienes in Solution

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TABLE A

MONOMERS	RADICALS			
	HEXAFLU- OROBUTA- DIENE	ISO- PRENE	FLUORO- PRENE	CHLORO- PRENE
Chloroprene.....	10.0	7.52	4.55	1.00
Fluoroprene.....	4.16	—	1.00	0.31
Isoprene.....	1.37	1.0	—	0.28
Hexafluorobutadiene ..	1.00	0.84	0.34	0.18

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Copolymerization of Hexafluorobutadiene
With Dienes in Solution77350
SOV/79-30-1-11/78

Increase in the activity of chloroprene in comparison with butadiene is due to the polar chlorine atom, which upon introduction into the butadiene molecule disturbs its symmetry and causes the displacement of its electron density and polarization of the molecule. The dipole moment of the molecule is 1.42 D. The shift of the electron density is due to conjugation of π -electrons of the double bond with localized electrons of the chlorine atom. As a result of strong polarization, the molecules are mainly oriented in a 1,4 manner and are more active in the polymerization than butadiene molecules. The same is true in the case of fluoroprene, but the latter is less active than chloroprene. According to their activity, the investigated monomers can be arranged in the following order: chloroprene > fluoroprene > isoprene > hexafluorobutadiene. There are 14 figures; 1 table; and 6 references, 4 Soviet, 2 U.S. The 2 U.S. references are: Carothers, J. Am. Chem. Soc., 54, 4070 (1932); Simha, R., Wall, L. A., Research Natl. Bur. Standards, 41, 521 (1948).

SUBMITTED:

August 9, 1958

Card 5/5

5.3600

78261

SOV/79-30-3-15/69

AUTHORS: Klebanskiy, A. L., Fomina, L. P.

TITLE: Concerning the Radical and Ionic Reactions of Tetraethylthiuram Disulfide

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 3, pp 794-798 (USSR)

ABSTRACT: Radical decomposition of thiuram in carbon tetrachloride without initiator at 145° yields compound

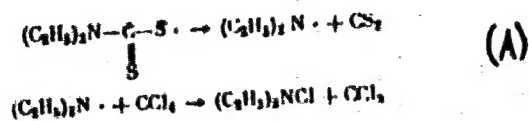
$(C_2H_5)_2N-C-SCl$ (yield 46%), mp 46-46.5°, which could be obtained only by the reaction of the $(C_2H_5)_2N-C-S$ radical with CCl_4 .

Carbon disulfide and a compound $(C_2H_5)_2NCl$ were also found among the reaction products. The formation of carbon disulfide and the other compound is evidently the result of the secondary reactions of thiuram radicals with CCl_4 .

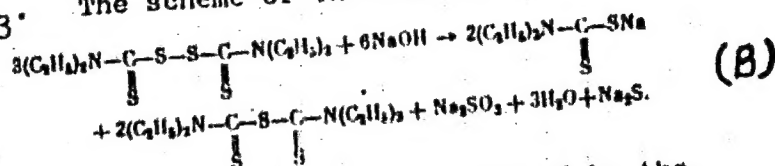
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Concerning the Radical and Ionic Reactions
of Tetraethylthiuram Disulfide

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SOV/79-30-3-15/69



Studying the ionic reactions of thiuram, the authors reacted tetraethylthiuram disulfide with bases, NaOH and NH_4OH . The following products were obtained: tetraethylthiuronium sulfide, mp 64-65; sodium diethyl dithiocarbamate, mp 94-96; and Na_2S and Na_2SO_3 . The scheme of the reaction is:



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The above reaction scheme was confirmed by the

Concerning the Radical and Ionic Reactions
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reaction of thiuram with alkali in the presence of elemental sulfur. Thiuronium sulfide was not obtained in this case; tetraethylthiuram disulfide was converted almost quantitatively (95.4%) into sodium diethyl-dithiocarbamate. Na_2S and Na_2SO_3 were also formed

in stoichiometric amounts (6). The ionic nature of the reaction of thiuram with alkali, its kinetics, was studied in the presence of an initiator, potassium persulfate and an inhibitor, phenyl- β -naphthylamine (neozone D). Neither initiator nor inhibitor affects the reaction rate of thiuram with alkali. The reaction of tetraethylthiuram disulfide with diethylamine at 60° yields tetraethyldiaminodithiocarbamate, mp $48-49^\circ$. There is 1 figure; 1 table; and 14 references, 8 U.S., 2 U.K., 3 German, 1 Soviet. The 5 most recent U.S. references are: Graig, Davidson, Rubb. Chem. Techn., 24, 262 (1951); Graig, Davidson, J. Polym. Sci., 8, 326 (1952); Graig, Davidson, J. Polym. Sci., 6, 177 (1951); Torbell, Harulsh, Chem. Revs., 48, 16 (1951); Bloomfield, J. Polym. Sci., 1, 111 (1946).

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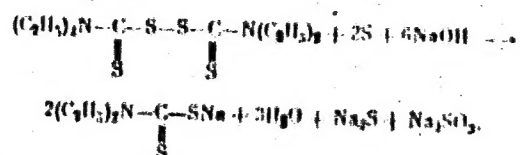
April 22, 1959

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Concerning the Radical and Ionic Reactions
of Tetraethylthiuram Disulfide

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(c)

Card 4/4

S/079/60/030/05/06/074
B005/B00253820
AUTHORS:Klebanakiy, A. L., Vosik, V. F.

TITLE:

Synthesis of Some Dichloro Derivatives of Octadiene-2,6

PERIODICAL:

Zhurnal obshchey khimii, 1960, Vol. 30, No. 5, pp 1428-1431

TEXT: The present paper describes the syntheses of 2 compounds constituting the two possible basic types of the chloroprene rubber structure: 2,7-dichlorooctadiene-2,6 (I) and 2,6-dichlorooctadiene-2,6 (II). Both compounds were produced for the first time. Compound (I) can be obtained from 1,3-dichlorobutene-2 (III) or from 1-iodine-3-chlorobutene-2 (IV) by means of an organomagnesium synthesis. Compound (III), however, does only react with magnesium, that has been well activated by iodine, and even then the reaction proceeds very slowly. For this reason, the authors used the hitherto undescribed compound (IV) as an initial product for the production of (I). This compound was synthesized in two different ways: by the reaction of gaseous HI with chloroprene in glacial acetic acid, and by the exchange reaction of (III) with NaI or KI in acetone. 6 isomeric compounds may arise from compound (IV) on the organomagnesium

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B005/B002Synthesis of Some Dichloro Derivatives of
Octadiene-2,6

synthesis. The chemical analysis and infrared spectroscopy clearly revealed that only the desired compound (I) is present in the reaction products. For the synthesis of compound (II) the authors proceeded from 2,6,8-trichlorooctadiene-2,6 (V), that was produced by the condensation of compound (III) with chloroprene in the presence of anhydrous FeCl₃ (Ref. 1). Various reduction methods were examined for the conversion of (V) into compound (II). The complete replacement of chlorine by hydrogen under the simultaneous conservation of the double bonds was achieved by the catalytic hydrogenation with hydrogen in the presence of Raney nickel and of sodium acetate for the binding of the resulting hydrogen chloride. The structure of compound (II) synthesized in this way was safely defined by the aid of infrared spectroscopy. All the operations are accurately described in an experimental part. Yield, boiling point, refractive index, density, and elementary per cent analysis are specified for all products obtained. Two figures show the infrared spectra of compounds (I) and (II). The spectra were taken and interpreted by G. I. Semenov. Their interpretation is described in great detail. There are 2 figures and 4 references: 1 Soviet, 1 American, 1 British, and 1 German.

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5.3700

77526
SOV/80-33-1-35/49

AUTHORS: Dolgopoli'skiy, I. M., Klebanskiy, A. L., Dobler, Z. P.

TITLE: Concerning Properties of Complex Compounds of Acetylene and Vinylacetylenes Formed in CuCl-MCl Solutions

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp 195-200 (USSR)

ABSTRACT: This is the first paper of a series on the conditions of formation, properties, and compositions of complexes formed by the reaction of acetylene and its dimer with CuCl-MCl solutions. The study was undertaken in order to explain the mechanism of catalytic polymerization of acetylene and vinylacetylenes; it is a continuation of the authors' previous work, a short review of which is given. The following changes of properties of solutions connected with complex formation are reported: color of the solutions and precipitated complexes; increasing solubilities of cuprous chloride and acetylenic hydrocarbons; pH changes of CuCl-MCl solutions with dissolution of

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Concerning Properties of Complex Compounds
of Acetylene and Vinylacetylenes Formed
in CuCl-MCl Solutions

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acetylene and vinylacetylenes. Complexes $C_6H_6(CuCl)_2$ and $C_8H_8(CuCl)_2$, formed by the reaction of $CuCl-NH_4Cl$, and corresponding hydrocarbons were obtained for the first time. It was found that the color of solutions containing C_2H_2 , $CuCl$, MCl , and vinylacetylenes, changes as a result of complex formation. The colors of the solutions and the complexes depend on the component concentration, their ratio, nature of hydrocarbon, and the cation (M^+) of the complex forming component. The above is illustrated by the following data (see tables and figure). There are 1 figure; 4 tables; and 11 references, 1 German, 1 French, 9 Soviet.

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April 29, 1959

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Concerning Properties of Complex Compounds
of Acetylene and Vinylacetylenes Formed
in CuCl-MCl Solutions

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Table 1.

(a)	(b)			
	(c)	(d)	(e)	(f)
0.05	(1)	(7)	(8)	(9)
0.10	(2)			
0.25	(3)			
0.50	(4)			
0.75	(5)			
1.00	(6)			

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(See Card 4/8 for Captior. to Table 1)

Concerning Properties of Complex Compounds
of Acetylene and Vinylacetylenes Formed
in CuCl-MCl Solutions

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Table 1. Color of crystalline precipitates
in a solution of: 2.5 mole CuCl , 5 mole NH_4Cl ,
depending on concentration of acetylenic hydrocarbon.
(a) Concentration of acetylenic hydrocarbon
(in mole/liter); (b) color of precipitated com-
plexes; (c) acetylene; (d) vinylacetylene; (e)
divinyl acetylene; (f) acetylene tetramer; (1) red
yellow; (2) orange yellow; (3) canary yellow;
(4) pale yellow; (5) colorless; (6) colorless; (7)
canary yellow; (8) yellow; (9) orange yellow.

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(See Card 3/8 for Table 1)

Concerning Properties of Complex Compounds
of Acetylene and Vinylacetylenes Formed
in CuCl-MCl Solutions

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Table 2. Effect of different cations on color of
CuCl-MCl solutions on saturation with acetylene at
80°. (a) Chloride cation; (b) electric field
intensity of cation; (c) color of CuCl solution;

(1) NH₄; (2) K; (3) Ca; (4) Mg, (5) Al; (6) orange
(7) yellow orange; (8) yellow; (9) straw yellow;
(10) pale yellow.

(a)	(b)	(c)
(1)	0.48	(6)
(2)	0.80	(7)
(3)	1.2	(8)
(4)	3.1	(9)
(5)	9.2	(10)

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Concerning Properties of Complex Compounds
of Acetylene and Vinylacetylenes Formed
in CuCl-HCl Solutions

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Table 3.

(a)				(b)				
CuCl	NH ₄ Cl	H ₂ O	C ₂ H ₂	0.05	0.15	0.30	0.45	0.60
				(c)	(d)	(e)	(f)	(g)
2.5	5.0	40	0.25	(1)	(1)	(1)	(1)	(1)
			0.50	(2)	(2)		(1)	(1)
			0.75	(3)	(3)		(2)	(2)
5.0	5.0	40	0.25	(4)	(4)	(2)	(2)	(2)
			0.75	(5)	(5)	(3)	(3)	(3)
			0.25	(6)	(6)	(4)	(4)	(3)
5.4	5.0	30	0.75	(7)	(7)	(5)	(5)	

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Concerning Properties of Complex Compounds
of Acetylene and Vinylacetylenes Formed
in CuCl-MCl Solutions

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Table 3. Effect of concentration of components
in solution on the color of acetylene complexes.
(a) Concentration of components in solution (in
mole/liter); (b) color of the precipitate of acetylene
components at HCl concentration (in mole/liter).

(c)	(d)	(e)	(f)
(1) orange	(1) orange yellow	(1) colorless	(1) colorless
(2) yellow	(2) colorless	(2) yellow	(2) colorless
(3) colorless	(3) colorless	(3) colorless	(3) colorless
(4) orange	(4) orange	(4) orange yellow	(4) yellow
(5) yellow	(5) colorless	(5) colorless	(5) colorless
(6) orange	(6) orange		
(7) yellow	(7) yellow		
		(g)	
		(1) colorless	
		(2) colorless	
		(3) colorless	

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Concerning Properties of Complex Compounds
of Acetylene and Vinylacetylenes Formed
in CuCl-MCl Solutions

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APPROVED FOR RELEASE: 06/19/2000

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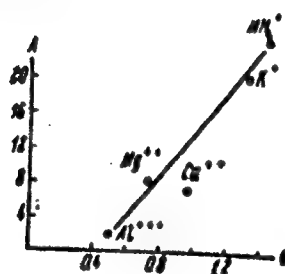


Fig. 1. Increase in CuCl solubility on passing
through C_2H_2 , depending on cation M^+ radius.

(A) Increase of CuCl solubility (in %); (B) radius
of cation M^+ (in A).

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5.3400

77528
SOV/80-33-1-37/49

AUTHORS: Dolgopol'skiy, I. M., Klebenskiy, A. L., Dobler, Z. F.

TITLE: Concerning the Solubility of Alkynes in Solutions of CuCl-MCl. Communication II

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp 209-212 (USSR)

ABSTRACT: The solubility of acetylene and vinylacetylene in solutions of CuCl-MCl sharply increases in comparison with their solubility in aqueous solutions of MCl. The solubility of acetylene and vinylacetylene increases with increasing field strength, of cations and of the polarity of the cations of ammonia derivatives. Increase of polarity of mono- and trimethylamine occurs with increase of the degree of substitution (weight of cation of ammonia derivative).

SUBMITTED: April 29, 1959

Card 1/3

Concerning the Solubility of Alkynes in
Solutions of CuCl-MCl. Communication II

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Table 1. Solubility of acetylene in solutions of MCl
and CuCl-MCl (ratio CuCl : MCl, 1:1).

Complex forming salt (MCl)	Concentration of acetylene in a solution (in mole/l)			
	MCl		CuCl-MCl	
	20°	80°	20°	80°
NH ₄ Cl	0.024	0.010	0.35	0.13
CH ₃ NH ₂ ·HCl	0.042	0.013	0.50	0.15
(CH ₃) ₂ NH·HCl	0.043	0.013	0.60	0.17
KCl	0.040	0.011	0.40	0.15
MgCl ₂	0.014	0.008	0.20	0.05

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Concerning the Solubility of Alkynes in
Solutions of CuCl-MCl. Communication II

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Table 2. Solubility of vinylacetylene in solutions of
CuCl:MCl at 80°. Molar ratio: CuCl:MCl = 1.

Complex Forming Salt (MCl)	Weight of cation (in g)	Concentration of vinylacetylene in solution (in mole/l)
NH ₄ Cl	18	0.10
CH ₃ NH ₂ ·HCl	32	0.12
KCl	39	0.13
(CH ₃) ₂ NH·HCl	46	0.14
(CH ₃) ₃ N·HCl	60	0.15
C ₄ H ₉ NH ₂ ·HCl	74	0.18

Card 3/3

5.2620

77630
SOV/80-33-2-5/52

AUTHORS: Dolgopol'skiy, I. M., Klebanskiy, A. L., Dobler, Z. P.

TITLE: Concerning the Stability of Complex Compounds of
Vinylacetylenes in CuCl-MCl Solutions

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 2,
pp 283-289 (USSR)

ABSTRACT: This article is the third in a series and deals with
the investigation of formation and decomposition
conditions of complex vinylacetylene compounds in
CuCl-MCl solutions, with different cations of the
complex-forming MCl compound. It was found that
the bond strength between vinylacetylene and the
central copper atom decreases the cation size (i.e.,
weight of the cation in the ammonium chloride
derivatives increases. The stability of complex
compounds is given in Fig. 1 as a function of the
cation field strength and of the cation molecular
weight.

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Concerning the Stability of Complex Compounds
of Vinylacetylenes in CuCl-MCl Solutions

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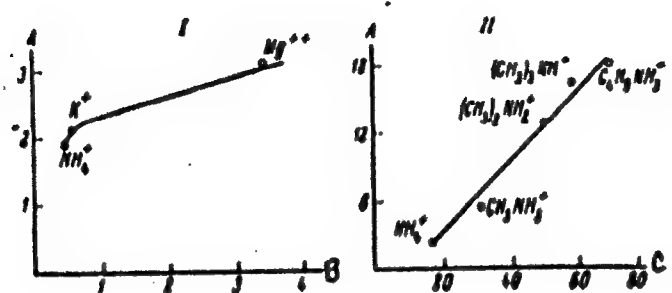


Fig. 1. Stability of vinylacetylene complex compounds in CuCl-Ml solutions as a function of the MCl-cation nature. (A) C₄H₄ evolution rate $\cdot 10^{-4}$ (in moles/sec); (B) cation field strength; (C) cation weight (in g). I, metals; II, substituted ammonia.

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Concerning the Stability of Complex Compounds
of Vinylacetylenes in CuCl-MCl Solutions

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When the bond strength between vinylacetylene and the copper atom was determined by means of absorption rate of the former, it was found that the formation rate of complex compounds is inversely proportional to the field strength of the MCl cation and to the cation molecular weight in ammonium chloride derivatives. The absorption rates are given in Fig. 2.

Regular lowering of the stability is caused by varying polarization of the acetylene or vinylacetylene effected by the central copper atom. The polarizing effect of the copper atom depends on the cation structure in the complex particle; the stronger the cation field, the smaller the thermal stability of the complex compound. When the cation field strength increases, the polarizing effect of the copper atom decreases because the central atom charge is counter-polarized by a similar charge on the cation. This also explains the decrease in complex compound bond strength with increasing degree of substitution of

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Concerning the Stability of Complex Compounds
of Vinylacetylenes in CuCl-MCl Solutions

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ammonium chloride derivatives. It was found that the stability of complex compounds also depends on the nature of the hydrocarbon and decreases according to the following sequence: acetylene > vinylacetylene > divinylacetylene > acetylene tetramer. There are 2 tables; 3 figures; and 1 Soviet reference.

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April 29, 1959

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Concerning the Stability of Complex Compounds
of Vinylacetylenes in CuCl-MCl Solutions

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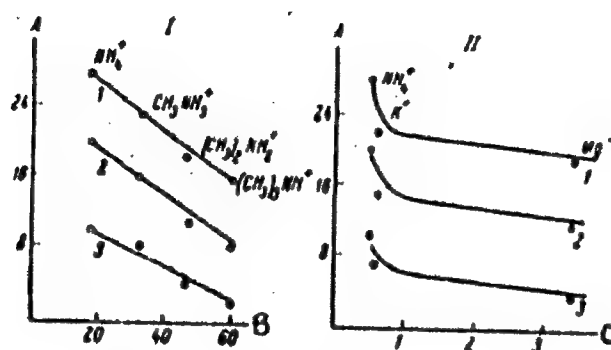


Fig. 2. Rate of formation of vinylacetylene complex compounds in CuCl-MCl solutions as a function of the cation nature. (A) C_4H_4 absorption rate $\cdot 10^{-4}$ (in moles/sec); (B) cation weight (in g); (C) cation field strength. Given: MC_4H_4 (in moles/l). (1) 0.37; (2) 0.26; (3) 0.13. I, substituted ammonia; II, metals.

Card 5/5

5.3300

78235
SOV/80-33-3-36/47

AUTHORS: Klebanskiy, A. L., Dolgopol'skiy, I. M., Dobler, Z. F.

TITLE: Concerning the Increase of the Hydrogen Ion Concentration
Accompanying the Formation of Complex Acetylene and
Vinylacetylene Compounds. Communication IV

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 3,
pp 716-723 (USSR)

ABSTRACT: The authors were the first to show conclusively (Trudy
VNIISK, Goskhimizdat (I), 80, 1948) that the dissolution
of acetylene and vinylacetylene in acid aqueous CuCl-MCl
solutions and the formation of complex compounds is
accompanied by an increase of hydrogen ion concentration.
In the present paper, the above phenomenon was studied
in $\text{CuCl-NH}_4\text{Cl}$ solutions, and the ion concentration was
measured chemically and potentiometrically (with G. A.
Seryshev' method, using a glass electrode) after
dissolution of various amounts of the above gases.
The increase of hydrogen ion concentration depended
on the $\text{CuCl:NH}_4\text{Cl}$ ratio and on the concentration of

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Concerning the Increase of the Hydrogen
Ion Concentration Accompanying the
Formation of Complex Acetylene and
Vinylacetylene Compounds. Communication IV

78235

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CuCl in the solution. In concentrated solutions, the increase corresponded to the ionization of 2 g-ions for acetylene, and to about 1 g-ion for vinylacetylene. There are 7 tables; 3 figures; and 11 references, 2 U.S., 2 French, 3 German, 4 Soviet. The U.S. references are: H. Gilman, K. Z. Bebb, J. Am. Chem. Soc., 61, 109 (1939); L. H. Ryerson, B. Gillespie, *ibid.*, 59, 900 (1937).

SUBMITTED: April 19, 1959

Card 2/2

3/080/60/033/04/30/045

AUTHORS: Klebanskiy, A.L., Dolgopol'skiy, I.M., Dobler, Z.P.

TITLE: On the Effect of Various Factors on the Degree of Ionization of Acetylene and Vinylacetylene in $\text{CuCl-NH}_4\text{Cl}$ Solutions. Communication 5.

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 4, pp 931 - 934

TEXT: It has been shown that during desorption of acetylene and vinylacetylene from $\text{CuCl-NH}_4\text{Cl}$ solutions a decrease of the acidity of the solutions or correspondingly a decrease of the concentration of hydrogen ions in the solution takes place. With an increase in the temperature the quantities of acetylene and vinylacetylene bound in the form of complex compounds with $\text{CuCl-NH}_4\text{Cl}$ decrease and the concentration of hydrogen ions in the solution decreases correspondingly. The degree of ionization of acetylene in $\text{CuCl-NH}_4\text{Cl}$ solutions decreases with an increase in the hydrochloric acid concentration in them, which is explained by a change in the composition of the complex compounds formed. During the formation of complex compounds of acetylene hydrocarbons which do not contain active hydrogen in the acetylene bond (like divinyl acetylene and acetylene tetramer), an increase in the concentration of hydrogen ions does not take place. There are: 4 tables and 2 graphs.

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S/080/60/033/04/39/045

AUTHORS: Dolgopol'skiy, I.M., Klebanskiy, A.L., Dobler, Z.F.TITLE: On the Effect of the Nature of M^+ Cations in $CuCl-M^+Cl^-$ Complexes on the Ionisation Degree of Acetylene and Vinylacetylene. Communication 6.

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 4, pp 975 - 978

TEXT: All factors affecting the stability of complex compounds have also a certain effect on ionization. It was established that the degree of ionization of acetylene and vinylacetylene decreases with an increase in the field intensity of the M^+ cation in $CuCl-MCl$ complexes. The ionization degree decreases with an increase in the degree of substitution in the cations of the ammonium derivatives or the size of the alkyl radical. Analogous laws were established concerning the effect of cations on the stability of complex compounds of acetylene and vinylacetylene with $CuCl-MCl$ solutions. An explanation is given of the effect of cations on the degree of ionization and the stability of complex compounds of acetylene and vinylacetylene. The explanation is based on the action of their field, directed contrary to the action of the field of the central copper atom (counterpolarizing effect), causing the weakening of the polarizing effect of the central copper atom and the decrease in the stability of complex compounds. There are 3 graphs, 1 table and 2 Soviet references.

SUBMITTED: June 19, 1959

Card 1/1

S/661/61/000/006/024/081
D205/D302

AUTHORS: Ponomarev, A. I. and Klebanakiy, A. L.

TITLE: Synthesis of silico-organic compounds with polar substituents in the organic radical and investigation of their stability

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganicheskikh soedineniy; trudy konferentsii, no. 6, Doklady, diskussii resheniye. II Vses. konfer. po khimii i prakt. prim. kremneorg. soyed., Len. 1958. Leningrad, Izd-vo AN SSSR, 1961, 116-119

TEXT: In addition to the published material it is stated that cyanomethyl heptamethyl cyclotetrasiloxane was obtained in 77% yield by the action of lithium methyl heptamethyl cyclotetrasiloxane on the solution of cyanogen in ether. Investigations have shown that dimethyl siloxane derivatives containing polar substituents in the side chain at the α -carbon atom are chemically and thermally unstable. When a nitrile or a carboxylic group is present in the

Card 1/2

S/191/61/000/001/005/015
B101/B205

AUTHORS: Mikheyev, Ye. P., Klebanskiy, A. L., Mal'nova, G. N.,
Popkov, K. K.

TITLE: Catalytic dehydrocondensation of silane chlorohydrides
with aromatic compounds

PERIODICAL: Plasticheskiye massy, no. 1, 1961, 19 - 21

TEXT: A study has been made of the reaction $\text{Si-H} + \text{H-Ar} \xrightarrow{\text{H}_2^+} \text{Si-Ar}$,
the temperature of which can be largely reduced by such catalysts as BCl_3 ,
 H_3BO_3 , AlCl_3 , etc. A paper by A. J. Barry et al. (Ref. 1) is discussed, in
which hydrogen is supposed to undergo electrophilic substitution at the
aromatic ring, accompanied by the catalytic formation of the complex
 $[\text{H} \cdot \text{BCl}_3]^+$. In addition, by-products with cyclohexadiene structure are
formed. These statements have been checked here. Methyl dichlorosilane

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S/191/61/000/001/005/015
B101/B205

Catalytic dehydrocondensation of ...

was heated in an autoclave with C_6H_6 , $C_6H_5CH_3$, $C_6H_5CH(CH_3)_2$, and C_6H_5Cl in the presence of 0.1% H_3BO_3 , and with C_6H_5F in the presence of 0.3% H_3BO_3 . The molar ratio of methyl dichlorosilane to the aromatic hydrocarbon was 1:3. Reaction temperature was 230-290°C. Heating was stopped as soon as the pressure in the autoclave had become constant. Under these conditions, which are described as being an optimum, the following dehydrocondensation products were obtained: 40% yield with C_6H_6 , 41% with $C_6H_5CH_3$, 24% with $C_6H_5CH(CH_3)_2$, 18% with C_6H_5F , and 25% with C_6H_5Cl . The mixture of the reaction products was fractionated. The resulting mixture of isomers of the new compound methyl-cumyl dichlorosilane boils between 127.6 and 137.6°C at a pressure of 26-28 mm Hg; $d_4^{20} = 1.1020$; $n_D^{20} = 1.5134$. Analysis has shown that this fraction follows the formula $C_{10}H_{14}SiCl_2$. The ratio of o-, m-, and p-isomers in methyl-aryl dichlorosilanes was determined from Raman spectra:

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Catalytic dehydrocondensation of

S/191/61/000/001/005/015
B101/B205

Compound	Experimental ratio		
	o-isomer	m-isomer	p-isomer
$\text{CH}_3(\text{CH}_3\text{C}_6\text{H}_4)\text{SiCl}_2$	1	10	3
$\text{CH}_3(\text{CH}_3)_2\text{CHC}_6\text{H}_4\text{SiCl}_2$	1	12	3
$\text{CH}_3(\text{FC}_6\text{H}_4)\text{SiCl}_2$	1	4	2
$\text{CH}_3(\text{ClC}_6\text{H}_4)\text{SiCl}_2$	1	6	4

The amount of CH_4 formed by reaction with benzene and toluene was 3.6 and 3.4%, prespectively; with cumene, 10.5%; with fluorobenzene, 12.6%; with chlorobenzene, 6.5%. Equal amounts of dimethyl dichlorosilane were obtained by reaction with benzene and toluene. This is taken as an indication that CH_4 and $(\text{CH}_3)_2\text{SiCl}_2$ are formed, not by decomposition of the hypothetical adducts, but by disproportionation of $\text{CH}_3\text{SiHCl}_2$. The fact

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S/191/61/000/001/005/015
B101/B205

Catalytic dehydrocondensation of

that primarily meta-derivatives are formed is explained in detail. According to previous papers of the authors (Refs. 4, 5), boric acid first forms a silyl hydride borate: $\text{H}-\overset{|}{\text{Si}}-\text{O}-\text{B}<$. As boron is a strong electron acceptor, it shifts the electron density and causes protonization of hydrogen bound to Si according to the reaction $\text{XC}_6\text{H}_5 + \text{H}-\overset{|}{\text{Si}}-\text{O}-\text{B}< \rightarrow$

$\rightarrow \text{C}_6\text{H}_5-\overset{|}{\text{Si}}-\text{O}-\text{B}< + \text{H}_2$. When the aromatic ring is substituted, the silyl borate anion is added in meta position. Similar complexes as formed with boric acid are assumed for BF_3 , BCl_3 , and AlCl_3 : $\text{H}-\overset{|}{\text{Si}}-\text{Cl}-\text{MHal}_3$. The formation of such complexes is considered to be more probable than the formation $[\text{H}:\text{MHal}_3]^-$. There are 1 table and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc.

Card 4/4

SAYADYAN, A.G.; KLEBANSKIY, A.I.; BARKHUDARYAN, M.G.

Film-forming substances from polymers of 1,3-dichlorobutene-2
and divinylacetylene. Lakokras. mat. 1 ikh. prim. no. 4:27-29
'61. (MIRA 16:7)

(Films(Chemistry)) (Polymers)
(Lacquer and lacquering)

18.8310

26988

S/138/61/000/005/001/006
A051/A129

15.9202

AUTHORS:

Klebanskiy, A. L., Tsukerman, N. Ya., Kartsev, V. N., Labutin, A. L.,
Trenke, Yu. V., Mal'shina, L. P., Borovikova, N. A., Karelina, G. G.,
Rozhkov, Yu. P.

TITLE:

A new type of chloroprene rubber: liquid nairite
(This work was awarded the second prize at the VGO im. D. I. Mendele-
yev competitions in 1959)

PERIODICAL: Kauchuk i rezina, no. 5, 1961, 1 - 5

TEXT:

The high chemical stability, the gasoline-petroleum stability and
ozone-resistance of chloroprene rubber makes it a suitable material for anti-corro-
sion coating and hermetic sealing. However, the difficulty of producing highly-
concentrated solutions based on commercial nairite limited the application of the
latter in anti-corrosion technique. It has been assumed that the use of low-mole-
cular polymers for this purpose would enable one to obtain low-viscous, highly-con-
centrated solutions satisfying the anti-corrosion techniques. One of the methods
for producing low-molecular polymers is the use of the polymerization of increased
concentrations of regulator-compounds able to break the chains and to form new ac-

Card 1/6

A new type of chloroprene rubber: 26988 liquid nairite

S/138/61/000/005/001/006
A051/A129

active centers. Sulfurous compounds, such as mercaptane, thioacids, xanthogenesulfides, are widely used as regulators. When studying the action of n-tetradecylmercaptane, diisopropylxanthogenedisulfide and bisethylxanthogenedisulfide during the process of polymerization of chloroprene, it was established that with an increase in the concentration of the regulator the molecular weight of the polymer drops correspondingly and the plasticity of the rubber increases. It was assumed that the use of greater quantities of bisethylxanthogenedisulfide in the polymerization of chloroprene in emulsion decreases the molecular weight of the polymer and yields low-viscosity solutions of rubber. An attempt was made to produce low-molecular polychloroprene by polymerization of chloroprene in the presence of sulfur with subsequent destruction of the polymer. It was shown that the action of sulfur differs from that of other regulators. The effect of sulfur on the polymers of chloroprene is shown by the scheme: $-(CH_2-CCl-CH-CH_2)_n-S_x-(CH_2-CCl-CH-CH_2)_m-S_x$, where $x=2-6$. The sulfur forms linear bonds in the polymer chain. With an increase in the bound sulfur content in the polymer the molecular weight of the polymer decreases in the subsequent interaction with thiuram from 600,000 to 280,000 with 0.3% of bound sulfur and from 300,000 to 43,000 with 1% of bound sulfur. The quantity of reacted thiuram increases respectively. The destruction scheme is given as follows:

- 1) The formation of free radicals under the effect of the thermal action or thiuram;

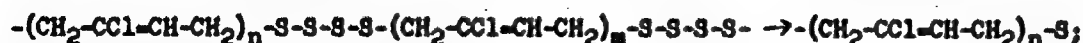
Card 2/6

26988

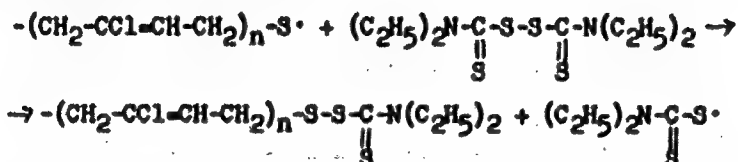
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A new type of chloroprene rubber; liquid nairite

A051/A129



2) Recombination of the polymer radical with molecular thiuram and splitting off of the latter along the -S-S-bond;



Based on the outlined assumptions of the mechanism of the sulfur action during the process of chloroprene polymerization and destruction of the polymer under the effect of the chemical masticating substances, the conditions for producing low-molecular chloroprene rubber-"liquid" nairite were developed. The liquid types of nairite can be obtained on a typical apparatus. The sulfur can be introduced in the form of solutions in mineral oils as well as aqueous dispersions obtained in the presence of emulsifiers and protective colloids. It was shown by V. N. Kartsev, M. A. Gutman, G. G. Karelina, F. Ye. Berman, Ye. G. Malinovskaya, M. B. Shur at VNIISK, no. 2389, 1951, that for mastication the most effective system is mercapto-

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A new type of chloroprene rubber; ²⁶⁹⁸⁸ liquid nairite

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A051/A129

benzothiazol (captax)-diphenylguanidine (DPHG). To increase the activity of these agents, tetramethylthiuramdisulfide was added (thiuram D) or tetraethylthiuramdisulfide (thiuram E). Literature data indicate that active masticating agents of polychloroprene are the piperidine salt of hexamethylenedithiocarbamine acid or ammonium hexamethylenedithiocarbamate. The order of introduction of the agents plays an important role. The effect of the type and composition of the carbon black on the solubility of the rubber mixtures from "liquid" nairite was investigated. Only the thermal carbon black helps to retain complete solubility. Higher indices of relative elongation when filling with 100 w.p. and over are achieved with thermal carbon black. The composition and technology for preparing the rubber mixtures based on the "liquid" nairite with thermal carbon black as filler yielded highly-concentrated solutions (70 - 75%). These solutions are suitable for sealing various equipment by the same methods which are used in the case of dye and varnish coatings. Tests of coatings made of liquid nairite in experimental and natural samples in various industrial fields showed the expediency of using this product as a material for protecting the metal from corrosion, erosion, cavitation and also as a material for hermetic sealing. There are 4 tables and 21 references: 2 Soviet-bloc, 19 non-Soviet-bloc. The references to the 4 most recent

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A new type of chloroprene rubber; liquid nairite 26988

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A051/A129

English-language publications read as follows: Corros. Technol., 5, no. 4, 107 (1958); R. B. Seymour a. oth., Plastics for Corrosion Resistant Application, N.Y., 1955, 90; Rubb. a. Plast. Age, 39, no. 8, 684 (1958); Corros. Technol., 3, no. 3, 89 (1956).

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S. V. Lebedeva (All-Union Scientific Research Institute of Synthetic Rubber im. S. V. Lebedev)

Card 5/6

15.9201

27544
S/138/61/000/006/002/006
A051/A129

AUTHORS: Labutin, A. L., Klebanskiy, A. L., Tsukerman, N. Ya., Kartsev, V. M.,
Trenke, Yu. V., Mal'shina, L. P., Borovikova, N. A., Karelina, G. G.,
Rozhkov, Yu. P.

TITLE: "Liquid nairite" - a new material for rubberizing

PERIODICAL: Kauchuk i rezina, no. 6, 1961, 5 - 8

TEXT: The authors state that in the chemical destruction of "liquid" nairite, highly concentrated solutions can be produced which are applicable as a material for rubberizing. In the USSR a safer binary solvent, consisting of 2 weight parts of ethylacetate and 1 w.p. of gasoline is used in nairite adhesives. Experiments showed, however, that this solvent in "liquid" nairite is not suitable for many technical reasons. Better results were obtained in using a ternary solvent consisting of 76% solvent, 19% turpentine and 5% n-butanol. The latter component does not dissolve the nairite, but facilitates the use of the brush for painting and good coating distribution. It was noted that film vulcanization from liquid nairite at 20°C does not show positive results. Thus various forms of thermal vulcanization were investigated: vulcanization with heated air, live vapor, hot water

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"Liquid nairite" - a new material for rubberizing

and infra-red irradiation. It was established that the most suitable method was vulcanization by hot air. The physico-mechanical indices of nairite coatings vulcanized in air at various temperatures are given in Fig. 1. Fig. 2 shows the relationship between the temperature and duration of the vulcanization. The most suitable temperatures of vulcanization in air are within the range of 100 - 142°C. It was noted that the liquid nairite coatings did not possess the proper adhesion to metal. Thus certain other adhesives or coatings ensuring better adhesion between metal and coating were sought. The best results were obtained with the following three materials: standard leuconate (organic base; n, n', n'' - triisocyanate-triphenylmethane), chloronairite adhesive (organic base; chloronairite and nairite) and a primer, tentatively called epoxide primer (organic base; epoxide resin, chloronairite and nairite). The chemical stability and anti-corrosion properties of the vulcanized nairite coatings were studied. The conclusion was drawn that 1,2-mm nairite coatings in combination with a water-resistant coating applied three times can reliably protect metals from corrosion due to aqueous solutions of many acids, alkali and salts. The coatings were not resistant to the action of oxidizing agents, aromatic and halided solvents. Rubber coatings differ from varnish and plastic coatings by an increased resistance to abrasive wear. An attempt was made

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"Liquid nairite" - a new material for rubberizing

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A051/A129

to determine the resistance of nairite coatings under conditions of dry friction using the Grosselli-type machine. It is concluded that coatings of so-called crystallizing liquid nairite obtained in low-temperature polymerization are superior to other rubbers in their wear-resistance, excepting vulcollane, which has a unique resistance to abrasive wear. It was established that coatings of liquid oil nairite are superior to coatings of bakelite, polyethylene and caprone, when tested in rapidly flowing sea water. Tests have further shown that liquid nairite as a material for coatings will become widely used in industry in the next few years. At present tests are being conducted in the North Sea and the Atlantic Ocean on propellers of fishing trawlers coated with liquid nairite for protection from corrosion, erosion and cavitation. Mechanical plants are testing steel covers of refrigerators and condensators coated with nairite. These were previously manufactured from non-ferrous metals. Certain chemical plants have installed diaphragm valves, the interior of which is covered with liquid nairite to prevent corrosion from acid solutions, alkali and salts. The possibility of using nairite coatings in various instruments as a means for preventing spark formation in percussion has also been revealed. Finally, it was established that these coatings can be used in certain constructions for hermetic sealing. At the Moscow TETs NO 12 a vacuum-condensator of a mass-produced 50 thousand kw steam turbine withstood a

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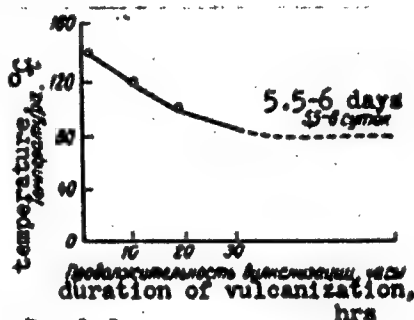
A051/A129

"Liquid nairite" - a new material for rubberizing

testing period of one and a half years with the brass pipes and steel pipe boards coated with liquid nairite. K. S. Shmurey, O. P. Abolina, A. I. Konstantinova and G. A. Selivanovskaya took part in the work. There are 2 tables and 2 sets of graphs.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kau-
chuka im. S. V. Lebedeva (All-Union Scientific Research Institute of
Synthetic Rubber im. S. V. Lebedev)

Fig. 2. Dependence of the vulcanization duration of the coatings made of liquid nairite on the temperature



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11.2214
15.920627500
S/063/61/006/003/004/004
A051/A129AUTHORS: Ryazanova, R.M., Dolgopol'skiy, I.M., Kleban'skiy, A.L.

TITLE: Perfluorobutadiene in the reaction of diene synthesis

PERIODICAL: Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva im.D.I.Mendeleeva,
v.6, no. 3, 1961, 356 - 357

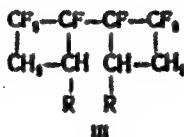
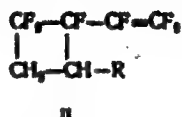
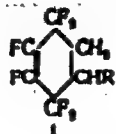
TEXT: The authors have studied the behavior of hexafluorobutadiene in diene synthesis reactions, characteristic for a conjugated system of double bonds. They investigated the reaction of hexafluorobutadiene with maleic anhydride, 1,4-naphthaquinone, acrylonitrile, styrene, methylmethacrylate, divinyl and isoprene. Hexafluorobutadiene was synthesized according to Ref. 4; Ch. Slesser, S.R. Schram, Preparation, properties and technology of fluorine and organic fluoro-compounds, N.Y. - Toronto - London, 1951. It was established that hexafluorobutadiene does not react with maleic anhydride nor with 1,4-naphthaquinone, both without a solvent as well as with a solution of toluene. The reactions with acrylonitrile, styrene and methylmethacrylate resulted in the production of addition products with satisfactory yields, boiling within a narrow temperature range. Theoretically it was expected that as a result of the interaction bet-

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A051/A129

Perfluorobutadiene ...

ween acrylonitrile and styrene with hexafluorobutadiene one of the following structures would result:



where R = CN, C₆H₅

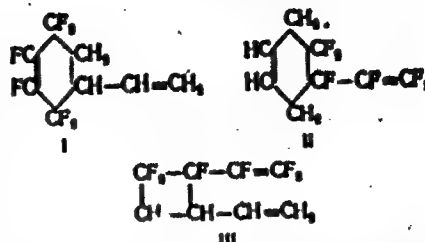
The absence of structures (I) was determined from data of infrared spectra of these compounds. In the fractionation of the product of interaction between hexafluorobutadiene and divinyl and isoprene, two fractions each time were obtained. The determination of the molecular weights, calculation of the molecular refractions and an analysis for unsaturation indicated that the low-boiling fractions were an addition product of one molecule of hexafluorobutadiene and one molecule of a diene hydrocarbon. One of the following isomers was theoretically expected

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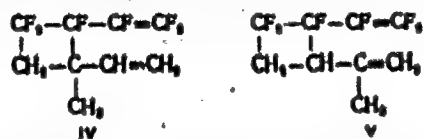
27500
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A051/A129

Perfluorobutadiene ...

from the addition product and divinyl:



For the addition product and isoprene, in addition to the listed structures of type (I) and (II); the cyclobutane derivative can occur in the form of two isomers determined by the position of the group-CH₃ with respect to the cycle:



The high-boiling fractions of the addition products with divinyl and isoprene were assumed to be addition products of the second molecule of the diene hydro-

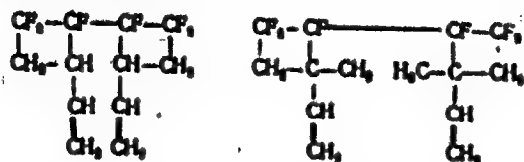
Card 3/4

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A051/A129

Perfluorobutadiene ...

carbon to the remaining perfluorovinyl group. Based on the properties mentioned, the structure of these compounds is given as:



There are 4 references; 3 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S.V. Lebedeva (All-Union Scientific Research Institute of Synthetic Rubber im. S.V. Lebedev)

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Card 4/4

LABUTIN, A.L.; KLEBANSKIY, A.L.; TSUKERMAN, N. Ya.; KARTSEV, V.N.; TREKKE, Yu.V.;
MAL'SHINA, L.P.; BOROVIKOVA, N.A.; KARELINA, G.G.; ROZHKOV, Yu. P.;
Prinimali uchastiye: SHMUREY, K.S.; ABOLINA, O.P.; KONSTANTINOVA, A.L.;
SELIVANOVSKAYA, O.A.

"Liquid nairit," a new material for rubberizing. Kauch. i rez. 20
no.6:5-8 Je '61. (MIRA 14:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo
kauchuka im. S. V. Lebedeva.

(Neoprene)
(Rubberized fabrics)

KLEBANSKIY, A.L.; TSUKERMAN, N.Ya.; KARTSEV, V.N.; LABUTIN, A.L.; TREKKE,
Yu.V.; MAL'SHINA, L.P.; BOROVIKOVA, N.A.; KARELINA, O.O.; ROZHKOY, Yu.P.

Liquid nairit, a new type of chloroprene rubber. Kauch.1 rza. 20
no.20:1-5 My '61. (MIRA 14:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo
kauchuka im. S.V.Lebedeva.
(Rubber, Synthetic) (Neoprene)

39845

S/190/62/004/008/003/016
B117/B144

5.3832

AUTHORS: Klebanskiy, A. L., Chevychalova, K. K., Yefremova, Ye. M.

TITLE: Formation conditions and structure of dimers obtained by the bulk polymerization of chloroprene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 8, 1962, 1145-1150

TEXT: The polymerization of chloroprene in the presence of peroxides or tetraalkyl Thiuram disulfide with sulfur at 50 - 55°C, and the effect of individual factors on the formation of dimers, were studied. The formation rate and the dimer-to-polymer ratio increase when the polymerization temperature rises. Dimers are the main products obtained in the presence of inhibitors. Increasing the degree of polymerization to >70% brings down the relative amount of the resulting dimers to 4 - 5%. The high-molecular polymerization of chloroprene in the presence of tetramethyl thiuram disulfide yielded dimers, of which 65% have the structure of 1,5-dichlorocycloocta-1,5-diene, whilst 12% were 4-(1-chlorovinyl)-1-chlorocyclohexene. The structure was determined by oxidation, ozonolysis, and hydrogenation at 20°C in the presence of platinum black, yielding a

X

Card 1/2

Formation conditions and...

S/190/62/004/008/003/016
B117/B144

product with the physicochemical constants of cyclooctane. The structure of the latter was confirmed by oxidation with nitric acid yielding suberic acid. The prevailing formation of 8-membered dimers was explained by the stabilization of the primary 8-membered cyclic complex owing to an increase in viscosity of the medium during polymer formation, and owing to the absence of catalytic inhibitors. There are 4 figures. X

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy Institut sinteticheskogo kauchuka im. S. V. Lebedeva (All-Union Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev)

SUBMITTED: May 3, 1961

Card 2/2

35057

9/063/62/007/002/011/014
A057/A126

11.223

AUTHORS: Gridina, V.P., Klebanskiy, A.L., Bartashev, V.A.
TITLE: Boronorganic compounds. Synthesis of some fluoroalkyl derivatives of boron
PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva imeni D.I. Mendeleeva, v. 7, no. 2, 1962, 230 - 231

TEXT: Recent publications treated the instability of perfluoroalkyl derivatives of boron. The instability of these compounds with the fluorine atom in the α -position can be explained by an inductive effect. The present authors observed that this effect is reduced in compounds with the fluorine atom in γ -position of the type $R_FCH_2CH_2BX_2$ where R_F stands for CF_3 , and X for OH or OR. Four new substances of this type were synthesized being relatively stable against heat and oxidation. The 3,3,3-trifluoropropylboronbutylester was prepared according to the following reaction:



The 3,3,3-trifluoropropylboric acid $CF_3CH_2CH_2B(OH)_2$ was separated from the Mg-complex of reaction (1) with 10% H_2SO_4 and subsequent treatment of the mixture
Card 1/2

S/C63/62/007/002/011/014
A057/A126

Boronorganic compounds.....

with water and benzene. The acid can be obtained also by a heating of the ester with 5 N HCl. The third substance 3,3,3-trifluoropropylboronethyl-ester $\text{CF}_3\text{CH}_2\text{CH}_2\text{B}(\text{OC}_2\text{H}_5)_2$ was prepared from the obtained fluoropropylboric acid by heating with excess absolute ethanol. From the same acid was obtained the anhydride $(\text{CF}_3\text{CH}_2\text{CH}_2\text{BO})_3$ by heating with benzene, removing the evolved water as azeotrop mixture, or by heating in vacuum over a dehydrating agent, such as calcinated Al_2O_3 . There are 2 references.

ASSOCIATION: Vsesoyuznoy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S.V. Lebedeva (All-Union Scientific Research Institute of Synthetic Rubber imeni S.V. Lebedev)

SUBMITTED: August 28, 1961

X

Card 2/2

KLEBANSKIY, A. L., POMINA, L. P., DOLOPLOS, S. B.

Some methods of synthesizing siloxane polymers having phenyl links in the chain. Zhur. VKhO 7 no.5:594-595 '62.

(MIRA 15:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka imeni S. V. Lebedeva.

(Siloxanes)

33936

S/079/62/032/001/014/016
D204/D302

5.2420
5.2410

AUTHORS: Gridina, V.F., Klebunskiy, A.L., Bartashev, V.A., and Sharov, V.N.

TITLE: Fluoroalkyl aryl derivatives of boron

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 1, 1962, 322

TEXT: The compound $m\text{-CF}_3\cdot\text{C}_6\text{H}_4\cdot\text{B}(\text{OC}_2\text{H}_5)_2$ was prepared by the action of a Grignard reagent on m -bromo-benzotrifluoride and ethyl borate, decomposing the Mg complex with gaseous HCl. Its b.p. was $90^\circ\text{C}/10\text{ mm Hg}$, d_{20}^{20} 1.1433, n_D^{20} 1.4341. Decomposition of the Mg complex with 10 % H_2SO_4 gave the anhydride $(m\text{-CF}_3\cdot\text{C}_6\text{H}_4\cdot\text{BO})_3$, melting at $162\text{-}163^\circ\text{C}$. There is 1 Soviet-bloc reference. ✓

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka imeni S.V. Lebedev (All-Union Scientific Research Institute of Synthetic Rubber im. S.V. Lebedev)

SUBMITTED: July 20, 1961
Card (1/1)

33937

S/079/62/022/001/015/016
D204/D302

5.2420
5.2410

AUTHORS: Gridina, V.F., Klebanskiy, A.L., and Bartashev, V.A.

TITLE: The peculiarities of behavior of the organic esters of boron with fluoroalkyl aryl radicals

PERIODICAL: Zhurnal obshehey khimii, v. 32, no. 1, 1962, 323

TEXT: Interaction of aryl borates with PCl_5 gives generally the corresponding dichlorides. The action of PCl_5 on $\text{m-CF}_3\text{C}_6\text{H}_4\text{B}(\text{OC}_2\text{H}_5)_2$ resulted, however, in $\text{m-CCl}_3\text{C}_6\text{H}_4\text{BCl}_2$ of b.p. 112°C and a small amount of $\text{m-CF}_3\text{C}_6\text{H}_4\text{BCl}_2$ of b.p. 74°C . $\text{m-CCl}_3\text{C}_6\text{H}_4\text{BCl}_2$ splits off all 5 chlorine atoms on boiling with alkali and hydrolyzes in air to the anhydride $(\text{m-CCl}_3\text{C}_6\text{H}_4\text{BO})_3$ of m.p. 192°C and not to $\text{m-CCl}_3\text{C}_6\text{H}_4\text{B}(\text{OH})_2$ as expected. There is 1 Soviet-bloc reference. ✓

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka imeni S.V. Lebedev (~~41-010101~~)

Card 

S/079/62/032/001/016/016
D204/D302AUTHORS: Klebanskiy, A.L., Yuzhelevskiy, Yu.A., Kogan, E.V.,
and Kagan, Ye.G.TITLE: The isomerism of 1,3,5-tris(3,3,3-trifluoropropyl)-
1,3,5-trimethyl cyclotrisiloxane

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 1, 1962, 323-324

TEXT: A description is given of the hydrolysis products of 3,3,3-trifluoropropyl methyl dichlorosilane, at 190-210°C/18 mm Hg, in the presence of 0.5 % KOH (as 50 % aq. solution). The distillate, collected at 130° C/18 mm Hg, consisted of ~80 % of crystals (I) of m.p. 35.2°C, b.p. 243° C/759 mm Hg, d_4^{40} 1.2309, n_D^{40} 1.3590 and ~20 % of a liquid (II) of m.p. -15.5°C, b.p. 239°C/759 mm Hg, d_4^{20} 1.2576 and n_D^{20} 1.3669. The molecular weights were practically identical. Either compound rearranged to a mixture of I and II when heated with KOH under the above conditions and it was, therefore, concluded that I and II were stereoisomers.

Card 1/2

DROZDOV, G.V.; KLEBANSKIY, A.L.; BARTASHOV, V.A.

Preparation of perfluorooxyloxy derivatives of biscyclopentadienyl-
titanium. Zhur.ob.khim. 32 no.7:2390-2391 J1 '62. (MIRA 15:7)
(Titanium organic compounds)

S/079/62/032/012/008/008
D424/D307

AUTHORS: Ponomarev, A.I. and Klebanskiy, A.I.
TITLE: Bromination of octamethylcyclotetrasiloxane. III
PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 12, 1962,
4022-4025

TEXT: Bromine does not react thermally with octamethylcyclotetrasiloxane at temperatures up to 150°C, and with ultra-violet irradiation the mixture resinifies even at room temperature. It is now found that octamethylcyclotetrasiloxane can be brominated smoothly with bromine chloride under the influence of the radiation from an electric lamp. The fact that no reaction takes place in the dark shows that it is a free radical reaction and not, like most reactions of bromine chloride, an ionic one. The action of 80 g of bromine, in the presence of the necessary amount of chlorine, on 636 g of octamethylcyclotetrasiloxane yielded 212 g (45.5% on the siloxane that had reacted) of monobromo derivative, 139 g (23.1%) of dibromo derivative, and 44.7 g (6.3%) of tribromo derivative. It was shown ✓

Card 1/2

Bromination of ...

S/079/62/032/012/008/008
D424/D307

by hydrolysis of the dibromo and tribromo derivatives with potassium hydroxide and the isolation of methylene bromide and chloroform, respectively, in high yields that those compounds were dibromomethyl- and tribromomethylhexamethylcyclotetrasiloxanes, the latter compound being the first reported to contain a tribromomethyl group attached directly to a silicon atom. There is 1 table.

SUBMITTED: January 8, 1962

Card 2/2

KLEBANSKIY, A.L.; SOROKINA, R.M.

Autoxidation of chloroprene by oxygen. Zhur.prikl.khim. 35
no.12:2735-2740 D '62. (MIRA 16:5)
(Chloroprene) (Oxidation)

DOLGOPLOSK, S.B.; CHEBYSHEVA, L.M.; KLEBANSKIY, A.L.; SHVARTS, Ye.Yu.;
FOMINA, L.P.

Some properties of rubbers made from siloxane polymers containing
arylene links in the principal chain. Kauch. i rez. 22 no.9:
1-2 S '63. (MIRA 16:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteti-
cheskogo kauchuka im. S.V. Lebedeva.

LARIONOVA, M. A.; KLEBANSKIY, A. L.; BARTASHEV, V. A.

Synthesis of some 3,3,3-trifluoropropyl derivatives of
phosphorus. Zhur. ob. khim. 33 no.1:265-266 '63.
(MIRA 16:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteti-
cheskogo kauchuka imeni S. V. Lebedeva.

(Phosphorus organic compounds)

S/079/63/033/001/021/023
D204/D307

AUTHORS: Ponomarev, A. I., Klebanskiy, A. L., Larionova, Yu. A.
and Bogdanova, V. V.

TITLE: The preparation of p-cyanophenylmethyldiethoxysilane

PERIODICAL: Zhurnal obshchey khimii, v. 33, no. 1, 1963, 316

TEXT: p-Bromophenylmethyldiethoxysilane (I) was obtained by reacting methylchlorodiethoxysilane with p-BrC₆H₄MgBr. The Br in I was then replaced with a nitrile group to give p-cyanophenylmethyldiethoxysilane (b.p. 111 - 112°C/3 mm Hg, n_D²⁰ = 1.5032, d₄²⁰ = 1.2058, MR_D = 57.69), in 45 - 50% yield. [Abstracter's note: Essentially complete translation.]

SUBMITTED: August 8, 1962

Card 1/1

KACAN, Ye.G.; KLEBANSKIY, A.I.; KHARLAMOVA, A.V.

Synthesis of some ethoxysilanes and disiloxanes with
3,3,3-trifluoropropyl groups. Zhur.ob.khim. 33 no.2:704-705
F '63. (MIRA 16:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo
kauchuka imeni S.V.Lebedeva.
(Silicon organic compounds) (Propane)

KIEBANSKIY, A.L.; DOLGOPOL'SKIY, I.M.; DOBLER, Z.F.

Complex compounds of acetylene with $\text{CuCl} - \text{NH}_4\text{Cl}$. Part 1.
Zhur.ob.khim. 33 no.3:761-768 Mr '63 (MIRA 16:3)
(Acetylene compounds) (Copper ehlorides)
(Ammonium chloride)

KLEBANSKIY, A.L.; DOLGOPOL'SKIY, I.M.; DOBLER, Z.F.

Effect of various factors on the formation of the complex
compounds of acetylene with $\text{CuCl} - \text{NH}_4\text{Cl}$ and properties
of the latter. Part 2. Zhur.ob.khim. 33 no.3:768-772
Mr '63. (MIRA 16:3)
(Acetylene compounds) (Copper chlorides)
(Ammonium chloride)

DOLGOPOL'SKIY, I.M.; KLEBANSKIY, A.L.; DOBLER, Z.F.

Effect of the nature of cations M^+ in MCl on the composition of complex
compounds of acetylene with $C_2Cl - MCl$. Part 3. Zhur.ob.khim. 33
no.4:1074-1076 Ap '63. (MIRA 16:4)
(Acetylene compounds) (Copper chlorides) (Ammonium chloride)

L 10669-63

EPF(c)/EMP(j)/EWT(m)/BDS--ESD-3--Pr-4/Pc-4--RM/WW
S/079/63/033/CO4/002/010 66AUTHOR: Kleban'skiy, A.L., Dolgopol'skiy, I.M., Dobler, Z.F.TITLE: Complex compounds of vinylacetylene with $\text{CuCl} \cdot \text{NH}_4\text{Cl}$.
IVPERIODICAL: Zhurnal obshchey khimii, v. 33, no. 4, 1963,
1077-1079

TEXT: The authors examine the complex compounds which are formed when vinylacetylene is saturated with solutions of $\text{CuCl} \cdot \text{NH}_4\text{Cl}$. The composition of the compound is $\text{C}_2\text{H}_3 \cdot 2\text{CuCl} \cdot \text{NH}_4\text{Cl}$ which corresponds to the results obtained indirectly by Tsyurikh and Ginzburg earlier. The amount of precipitate of this compound decreases with an increase of the weight ratio of $\text{NH}_4\text{Cl}:\text{CuCl}$ and also with a decrease of the quantity of absorbed vinylacetylene. The composition of the complex compound of vinylacetylene with $\text{CuCl} \cdot \text{NH}_4\text{Cl}$ remains constant and does not change with change in

Card 1/2

L 10669-63

8/079/63/033/004/002/010

Complex compounds of vinylacetylene...

the conditions of formation, as with the concentrations of the components of the solution (C_2H_3 , $CuCl$, NH_4Cl , and HCl) in the limits under study and with their ratios. The concentration of the components affects only the amount of the precipitate of the complex compound.

SUBMITTED: May 18, 1962

kes
Card 2/2

L 17734-63

EPR/EWP(j)/EPF(e)/EWP(q)/EWT(m)/BDS AFFTC/ASD

Ps-4/Pc-4/Pr-4 RM/WW/ID/MAX/JG

ACCESSION NR: AP3004289

S/0079/63/033/007/2422/2422

AUTHORS: Dronov, G. V.; Klebanskiy, A. L.; Bartashev, V. A. 76

TITLE: Synthesis of bis-cyclopentadienyl titanium bis-trifluoroethoxide. 7

SOURCE: Zhurnal obshchey khimii, v. 33, no. 7, 1963, 2422

TOPIC TAGS: cyclopentadienyl titanium, alkoxide, trifluoroethoxide, toluene, trifluoroethanol

ABSTRACT: Earlier attempts to prepare bis-alkoxy derivatives of bis-cyclopentadienyl titanium were unsuccessful. The reaction of two moles of sodium trifluoroethoxide with one mole of bis-cyclopentadienyl titanium dichloride in anhydrous toluene gave the title compound in 70-80% yield as a reddish brown, crystalline solid with melting point of 47-80°. The compound, in analogy with the orthotitanates, is associated in benzene solution. For proof of structure, the new compound was converted back to the starting dichloride by treatment with hydrogen chloride acetyl chloride. UV spectra show that the organo-titanium group in the two compounds have similar structures. Orig. art. has: no graphics.

ASSOCIATION: none

Card 1/E/

BURSHTEYN, L.L.; YUZHELEVSKIY, Yu.A.; KOGAN, E.V.; KLEBANSKIY, A.L.

Structure of isomers of 1,3,4-tris (3,3,3-trifluoropropyl)-1,
3,5-trimethylcyclotrisiloxane. Zhur. ob. khim. 33 no.8:2789-
2790 Ag '63. (MIRA 16:11)

DOLGOPOL'SKIY, I.M.; KLEBANSKIY, A.L.; DOBLER, Z.F.

Effect of the nature of cation M^+ in MOl on the catalytic activity
of CuOl solutions. Zhur.prikl.khim. 36 no.1:181-187 Ja '63.
(MIRA 16:5)

(Chlorides) (Acetylene) (Catalysis)

DOLGOPOL'SKIY, I.M.; KLEBANSKIY, A.L.; DOBLER, Z.F.

Effect of the nature of cations M^{+} in MCl on the catalytic activity of
solutions $CuCl - MCl$ during the process of vinylacetylene dimerization.
Zhur.prikl.khim. 36 no.2:394-398 F '63. (MIRA 16:3)
(Butenyne) (Polymerization) (Chlorides)

L 11291-63 KPR/EMP(j)/EPT(c)/EET(m)/ES(s)-2/BDS--AFTTC/ASD/SSD--

Ps-l/Pc-l/Pr-l/Pt-l--RM/MM/MAY

ACCESSION NR: AP3001404

8/0020/63/150/004/0813/0815

82

AUTHOR: Dolgoplosk, S. B., Kisebnakiy, A. L., Fomina, L. P., Fikhtengol'tsa, Shvarts, Ye. Yu.

TITLE: Siloxane polymers with phenylene groups in the backbone

SOURCE: AN SSSR. Doklady, v. 150, no. 4, 813-815 1963

TOPIC TAGS: siloxane polymers, phenylene groups, tetramethyldisiloxane, 1-dimethylsilyl-4-dimethylsiloxyphenylene, elasticity, x-ray patterns, thermo-mechanical curves, glass transition temperature

ABSTRACT: Research has been undertaken with the object of improving the heat resistance and resistance to irradiation of siloxane polymers and the physical and mechanical properties of vulcanisates. The authors synthesized a number of new rubberlike siloxane polymers of high molecular weight (intrinsic viscosity in benzene, 1.2 to 1.9), with phenylene groups in the backbone and various aromatic groups and substituents at the Si atom. In one of the compounds, the $\text{CH}_2\text{CH}_2\text{CF}_3$ group is used as a substituent. The effect of phenylene groups on the properties of siloxane polymers was studied on copolymers containing,

Cord 1/2

ACCESSION NR: AP4018058

S/0079/64/034/002/0702/0702

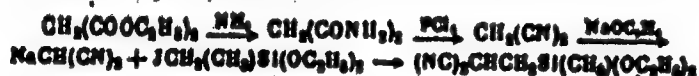
AUTHOR: Dmukhovskaya, Ye. B.; Klebanskiy, A. L.; Ponomarev, A. I.

TITLE: Synthesis and some properties of silanes with dinitriloalkyl radicals

SOURCE: Zhurnal obshchey khimii, v. 34, no. 2, 1964, 702

TOPIC TAGS: silane, dinitriloalkyl radical, organosilicon compound, methyl-Beta, Beta-dicyanoethyldiethoxysilane, dicyanopropyldiethoxysilane, chemical synthesis

ABSTRACT: In order to explain the effect of the nitriloalkyl radical combined with a silicon atom on the properties of an organosilicon compound, methyl- β , β -dicyanoethyldiethoxysilane was synthesized:



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ACCESSION NR: AP4018058

Methyl- β , β -dicyanoethyldiethoxysilane is an extremely unstable spontaneously resinified compound. When stored in darkness for a month in a medium of inert gas at room temperature, the product was converted from a clear liquid, boiling point 145C (7MM), into a viscous black resin. The resinification of this compound is explained by the protonization of hydrogen, combined with the β -carbon atom. The substitution of the free hydrogen atom in the electron donor group should lead to the stabilization of such a compound. As a result of synthesis from the diethyl ester of methylmalonic acid, methyl- β , β -dicyanopropyldiethoxysilane was obtained in which the initial properties were unchanged over a prolonged period. At present, the conditions of hydrolysis of methyl- β , β -dicyanopropyldiethoxysilane and the composition of the hydrolyzate are being studied. Hydrolysis in neutral and slightly alkaline mediums with an excess of water provides a vitreous product with a softening point of 125C. Hydrolysis in acid medium leads to a breakdown of the nitrile group. Orig. art. has: no formulas, figures, or tables.

Card 2/32

Sub: 2 Aug 63

ACCESSION NR: AP4034570

8/0079/64/034/004/1355/1356

AUTHOR: Kopnova, N. L.; Chugunov, V. S.; Klebanskiy, A. L.

TITLE: Synthesis of certain fluorine containing alkyl(aryl)siloxyaluminum diisopropoxides.

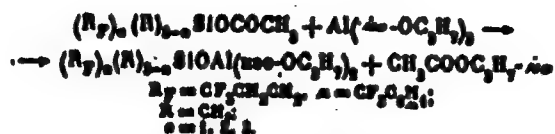
SOURCE: Zhurnal obshchey khimii, v. 34, no. 4, 1964, 1355-1356

TOPIC TAGS: alkylsiloxyaluminum diisopropoxide, arylsiloxyaluminum diisopropoxide, synthesis, triorganosiloxyaluminum diisopropoxide, triorganoacetoxysilane, aluminum triisopropoxide

ABSTRACT: Previously unknown triorganosiloxyaluminum diisopropoxides containing trifluoropropyl and m-trifluoromethylphenyl groups at the silicon atom were synthesized by reacting the appropriate triorganoacetoxysilanes with aluminum triisopropoxide in benzene, with continuous azeotropic removal of the isopropyl-acetate:

Card 1/2

ACCESSION NR: AP4034570



Boiling temperatures, densities and refractive indices are given for the following compounds: γ, γ, γ -trifluoropropyl dimethylsiloxyaluminum diisopropoxide, bis-(γ, γ, γ -trifluoropropyl)methylsiloxyaluminum diisopropoxide, tris-(γ, γ, γ -trifluoropropyl)siloxyaluminum diisopropoxide, m-trifluoromethylphenyl dimethylsiloxyaluminum diisopropoxide, bis-(m-trifluoromethylphenyl)methylsiloxyaluminum diisopropoxide. Orig. art. has: 1 table and 1 equation.

ASSOCIATION: None

SUBMITTED: 31Oct63

DATE ACQ: 11May64

ENCL: 00

SUB CODE: OC

NO REF SOV: 000

OTHER: 000

Card 2/2

ACCESSION NR: AP4037059

8/0079/64/034/005/1401/1403

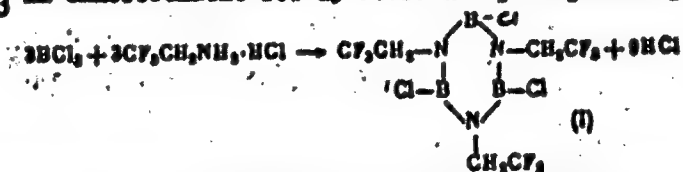
AUTHOR: Gridina, V. F.; Klebanskiy, A. L.; Bartashev, V. A.

TITLE: Synthesis of fluoroalkyl derivatives of borazole.

SOURCE: Zhurnal obshchey khimii, v. 34, no. 5, 1964, 1401-1403

TOPIC TAGS: borazole, fluoroalkylborazole, fluorine containing borazole, synthesis

ABSTRACT: Two new fluorine-containing derivatives of borazole were synthesized. B-trichloro-N-tri(trifluoroethyl)borazole, melting at 250C, was prepared by boiling $CF_3CH_2NH_2 \cdot HCl$ and BCl_3 in chlorobenzene for 15 hours and precipitating with tetrahydrofuran:

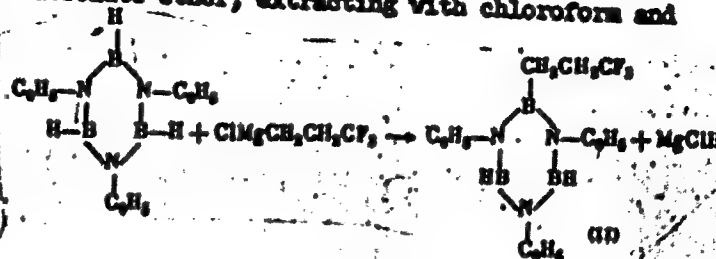


A bifunctional B-monofluoroalkyl-containing borazole, B-mono(3,3,3-trifluoropropyl)-N-triphenylborazole, melting at 128-130C, was obtained by alkylating N-triphenyl-

Card 1/2

ACCESSION NR: AP4037059

borazole with $\text{ClMgCH}_2\text{CH}_2\text{CF}_3$ in absolute ether, extracting with chloroform and precipitating with heptane!



Orig. art. has: 2 equations

ASSOCIATION: None

SUBMITTED: 28Feb63

SUB CODE: 00

DATE ACQ: 09Jun64

NO REF SOV: 000

ENCL: 00

OTHER: 005

Card 2/2

ACCESSION NR: AP4042083

~~5/0079/64/034/006/1780/782~~

AUTHOR: Yushelavskiy, Yu. A.; Kogan, E. V.; Klabanskiy, A. L.; Larionova, O. N.

TITLE: 3,3,3 Trifluoropropylmethyleyclosilaxanes isomers

SOURCE: Zhurnal obshchey khimii, vol. 34, no. 6, 1964, 1780-1782

TOPIC TAGS: trimer, pentamer, stereoisomer, hydrolysis

ABSTRACT: The authors established that a trimer, obtained during the catalytic destruction of the hydrolysis 3,3,3-trifluoropropylmethyleyclosilaxane, is a mixture of two stereoisomers. During the catalytic destruction process, in a Claisen flask at 200° (4 mm), a distillate was obtained which was a cyclic 3,3,3-trifluoropropylmethyleyclosilaxanes mixture. The authors concluded that further investigation is necessary to clarify the structure of the compound.

ASSOCIATION: none

SUBMITTED: 04Feb64

ENCL: 00

SUB CODE: 00

NO REF SOV: 001

OTHER: 003

1/1

Card

YUZHELEVSKIY, Yu.A.; KOGAN, E.V.; KLEBANSKIY, A.L.; LARIONOVA, O.N.

Rearrangement of 3,3,3-trifluoropropylmethylsiloxanes in
acetone under the effect of basic catalysts. Zhur. ob. khim.
34 no.8:2810 Ag '64. (MIRA 17:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo
kauchuka imeni S.V. Lebedeva.

ACCESSION NR: AP4017643

S/0190/64/006/002/0329/0334

AUTHORS: Myuller, B. Ye.; Apukhtina, N. P.; Klebanov, A. L.

TITLE: Chemical chain structure and properties of polyesterurethan elastomers. 1. Dependence of vitrification temperature upon the nature of the polymeric chain

SOURCE: Vyssokomolekulyarnyye soyedineniya, v. 6, no. 2, 1964, 329-334

TOPIC TAGS: elastomer, urethan, alkyl carbamate, polyesterurethan, polymer, polymeric chain, vitrification, elasticity, methylene group, adipurethan

ABSTRACT: Polyurethans (average molecular weight of 20 000) with an increasing concentration of C-O-C links in the main chain, such as polydiethyleneadipurethan (PDAU), polytriethyleneadipurethan (PTAU), and polyhexaethyleneadipurethan (PHAU), were studied. Ether bonds were introduced into the polymeric chain to increase its flexibility, which in turn would enhance the frost resistance of the derived rubbers. The frost resistance of the polymers was evaluated by means of the XS elastometer of the pendulum rebound type within a temperature range from -90 to 600 and by determinations of the vitrification temperature, using Marey's apparatus. It was found, that within the PDAU, PTAU, and PHAU series a lowering of the vitrification temperature occurs with a diminution in the concentration of ester groups

Card 1/2

ACCESSION NR: AP4017643

in the repeating unit of the corresponding polymers. It was also established that the magnitude of the difference between the vitrification temperatures of the linear polymers and of their corresponding minimums in the elasticity curves remains strictly constant, amounting to 25-26C. A certain periodicity in the shift of vitrification temperature in the investigated polyurethans could be related to an even or odd number of methylene groups in the glycol links of the chain. Orig. art. has: 1 table, 2 formulas, and 2 charts.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka (All-Union Scientific Research Institute of Synthetic Rubber)

SUBMITTED: 04Jan63

DATE ACQ: 23Mar64

ENCL: 00

SUB CODE: CH

NO REF SOV: 003

OTHER: 004

Card 2/2

ACCESSION NR: AP4042194

S/0190/64/006/007/1330/1334

AUTHOR: Myuller, B. Ye., Apukhtina, N. P., Klebanskiy, A. L.

TITLE: Effect of the chemical structure of polyester urethans on their crystallizability

SOURCE: Vyssokomolekulyarnyye soyedineniya, v. 6, no. 7, 1964, 1330-1334

TOPIC TAGS: urethan, polymer crystallizability, KS pendulum-type elastometer, elasticity modulus, alkyladipinate urethan, polyester, polyester urethan, polymer structure, dilatometer, glycol ester

ABSTRACT: In order to clarify the relationship between the chemical structure of urethan polymers and their crystallizability, the crystallization process was studied dilatometrically and by the pendulum-type KS elastometer on the basis of the variation in the modulus of dynamic elasticity with temperature (see Fig. 1 in the Enclosure). The experimental curves show that polymers synthesized from glycolesters of di-, tri- and hexaethylene adipate urethans, as well as polymers with methoxymethyl and propylethylene adipate urethans, are amorphous polymers. The amorphous nature of di-, tri- and hexaethylene adipate urethan is due largely to the disorienting effect of flexible C-O-C bonds, preventing the formation of nuclei. The oxygen atoms of the ether bond destroy the regular chain structure. In polymethoxymethyl and propylethylene adipates, the large side chains prevent

1/3

Card

ACCESSION NR: AP4042194

crystallization. Polymers obtained from glycols of the polymethylene series (ethylene, trimethylene, tetramethylene and pentamethylene adipate urethans) are crystalline polymers. The highest rate of crystallization is shown by tetramethyleneadipate urethan and pentamethyleneadipate urethan (2.2% per hour), followed by trimethylene and ethylene-adipate urethans (0.11 and 0.06% per hour, respectively). The half time of crystallization for the last three polymers were 40, 1120 and 1060 minutes, and the degree of crystallization was 2.1, 1.7 and 1.0%, respectively. The fact that tetramethyleneadipate urethan shows the highest crystallizability among the crystalline polymers is due to the very regular and symmetrical structure of its macromolecules. It is characteristic that tetramethyleneadipate urethan has the highest molecular weight. This indicates a denser packing of its macromolecules. Lower crystallizability is due to the fact that intramolecular forces increase the chaotic arrangement of the macromolecules, render them less mobile, and thus interfere with the orientation process. Orig. art. has: 4 figures.

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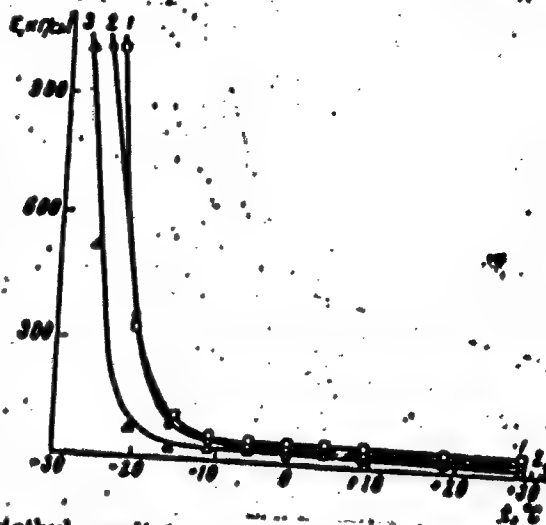
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ENCLOSURE: 01

Fig. 1 - Temperature dependence of the modulus of dynamic elasticity of urethan polymers based on glycol esters:



1 - diethyleneadipate-urethan; 2 - triethyleneadipate-urethan;
3 - hexaethyleneadipate-urethan.

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L 29949-65 ENT(m)/EPF(o)/ENP(j)/T Pc-l/Pr-l RM
 ACCESSION NR: AP5005388

S/0138/65/000/002/0001/0002

AUTHORS: Lobkov, V. D., Klebanskiy, A. L., Kogan, E. V.

TITLE: The effect of oxide derivatives of phosphorus on siloxane polymers 7

SOURCE: Kauchuk i rezina, no. 2, 1965, 1-2

TOPIC TAGS: phosphorus compound, silicon organic polymer

ABSTRACT: The primary act of interaction between α (ω)-dihydroxyl-dimethylsiloxanes and oxide derivatives of phosphorus is the formation of coordination compounds that activate the condensation of siloxandiols and the oxidation of organic radicals, enveloping the silicon and phosphorus atoms with hydrogen at low temperatures. Preliminary data on the kinetics of oxygen sorption by phosphorosiloxane polymers show that the rate of oxygen sorption at 100C is twice that at 60C. But at 100C no oxidation of the polymer is observed. This may be due to decay of the coordination bonds at this temperature. The dimethylsiloxane polymer does not oxidize under these conditions if oxide derivatives of phosphorus are not present. Orig. art. has: 1 table. 7

L 29949-65

ACCESSION NR: AP5005388

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo
kauchuka im. S. V. Lebedeva (All-Union Scientific Research Institute of Synthetic
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SUBMITTED: 00

ENCL: 00

SUB CODE: 00

NO REF SOV: 000

OTHER: 000

Card 2/2

33511-65 ENT(m)/EPF(c)/ENP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP5003839

S/0190/65/007/001/0163/0168

AUTHORS: Lobkov, V. D.; Klebanskiy, A. L.; Kogan, E. V.; L'vov, Yu. A.

TITLE: Effect of oxygen compounds of phosphorus on siloxane polymers " 28
27
B

SOURCE: Vysokomolekulyarnyye soedineniya, v. 7, no. 1, 1965, 163-168

TOPIC TAGS: phosphorus compound, polymer

ABSTRACT: The effects of oxygen compounds of phosphorus on siloxane polymers were experimentally investigated. The addition of 0.9% of orthophosphoric acid ($P:Si = 1:500$) to α, ω -dihydroxydimethylsiloxanes (DEDS) in an argon atmosphere at room temperature produced a very viscous rubberlike polymer (after 1 day $M = 260\ 000$; after 3 days $330\ 000$; after 20 days $400\ 000$). Adding 2% of triphenylphosphate ($P:Si = 1:230$) at room temperature in argon produced a rubberlike polymer (after 1 day $M = 149\ 000$; after 2 days $395\ 000$; after 30 days $400\ 000$). Reaction with triphenylphosphite or trinonylphosphite did not produce a viscosity increase. The weight growth of a phosphorosiloxane polymer obtained by polymerizing methylcyclotetrasiloxane with methylphosphonic acid (0.6% by weight) in the presence of HCl at $150^\circ C$ is shown in Fig. 1 on the Enclosure. It was established that reaction of DEDS with derivatives of 5-valent phosphorus produces coordinated

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L 33511-65

ACCESSION NR: AP5003839

polymers. The coordination is apparently carried out by means of the unshared electron pairs of the oxide and siloxane oxygens and the vacant 3d orbitals of the silicon and phosphorus atoms. The data suggested that the oxygen compounds of phosphorus cause condensation of the siloxanediols with liberation of water and formation of siloxane bonds. To prove this premise, a polymer was obtained by reacting DHDS with 5% (mol) methylphosphonic acid. It was stored in argon and was closely studied by spectroscopy. The study showed that water was liberated at room temperature with a resulting increase in molecular weight, thus confirming the assumptions. Orig. art. has 4 figures.

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L 33511-65

ACCESSION NR: AP5003839

ENCLOSURE: 01

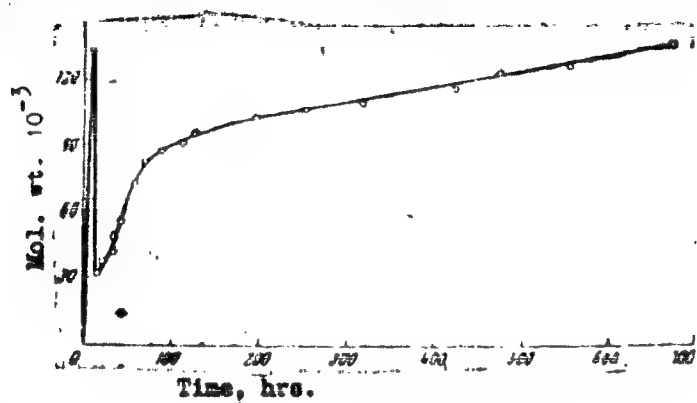


Fig. 1. Molecular weight change of phosphorosiloxane polymer

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EPF(c)/EPF(j)/T PC-4/Pr-4 RPL RM

8/0192/65/007/002/0293/0295

APR 005597

AUTHORS: Lobkov, V. D.; Klebanskiy, A. L.; Kogan, E. V.

TITLE: The effect of oxygenated compounds on silicones.

Prezheniye oksilyarnyykh soedineniy na ...

... oxygen compound, phosphorus ...

... of ... silhydroxyl ... average ...

... were placed in test tubes ...

... containing ...

... during ...

... the ...

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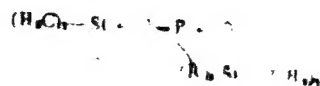
... the ...

... the indicated compounds ...

... of phosphorosiloxane coordination polymers

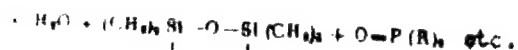
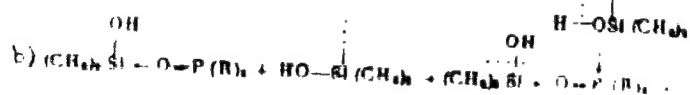
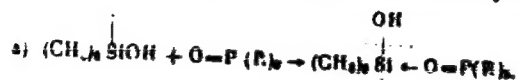
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ADDITIONAL NR: AP5005597



where R = OH, C₂H₅, OC₂H₅, OCH₂CH₃, etc.

c) condensation of the phosphorosiloxane coordination polymers,



5483-6F

A REVISION NR: AP5005597

and 3) oxidation of the polymers. Orig. art. has: 4 figures.

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REMITTED: 20Apr64

ENCL: 00

SUB CODE: CC, NT

NO REF SOV: 003

OTHER: 002

Card 3/3

7-35479-65 EPA(s)-2/EWT(m)EPF(c)/EPR/END(S)/T Pc-4/Pr-4/Pe-4/Pt-10 NW/RM
 S/0190/65/007/002/0350/0353
 ACCESSION NR: AP5005605

AUTHORS: Ponomarev, A. I.; Klebenskiy, A. L.

TITLE: Synthesis and properties of bifunctional organosilicon acids and their polymers

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 2, 1965, 350-353

TOPIC TAGS: organosilicon, polymer, thermal stability

ABSTRACT: The authors synthesized carboxymethylheptamethylcyclotetrasiloxane from magnesium-bromine methylheptamethylcyclotetrasiloxane in an autoclave first dried by nitrogen and cooled by dry ice. A solution of the latter compound was obtained from 150 g of bromomethylheptamethylcyclotetrasiloxane dissolved in 150 ml of ether and 10.8 g of magnesium (10% excess). This was supplied drop by drop to the autoclave from a drop funnel with a calcium chloride tube cooled by a jacket of dry ice. The process took 30 minutes. When the solution was completely introduced, the autoclave was tightly closed and placed in ice for 24 hours with periodic agitation. The material was then transferred in small portions to a cool flask with HCl . After the ether layer was removed, the aqueous layer was saturated with sodium sulfate and extracted by ether. The ether solution was warmed at 20°C in a vacuum (20 mm), and

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L 35479-65

ACCESSION NR: AP5005605

then frozen in a mixture of ice and salt. Crystals precipitated, were filtered off, and then recrystallized twice from pentane. A similar procedure was carried out to obtain the same compound from lithium methylheptamethylcyclotetrasiloxane. The compound proved to have poor thermal stability, decomposing with evolution of acetic acid on heating to 130-140C for 6 hours. When concentrated H_2SO_4 was added, it decomposed at room temperature. Rubberlike β -carboxyethylmethylsiloxane copolymers with varying amounts of β -carboxyethylsiloxane units in the copolymer, however, proved to have good thermal stability and to be unaffected by H_2SO_4 . Orig. art. has: 1 table.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka (All-Union Scientific Research Institute of Synthetic Rubber)

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OTHER: 004

Card 2/2